

## Wedge resection of duodenal gist, located on second portion of duodenum. Is it safe? A case report

Wedge resection of duodenal gist

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### Abstract

The most common location of gastrointestinal stromal tumors (GISTs) in the digestive system is the stomach with a rate of 50-70% and they are only seen in the duodenum at a rate of 3-5%. Due to the complex anatomical structure and localization of the duodenum, it is a region where complications are more common in surgical treatment compared to other localizations of the gastrointestinal tract. In this study, a 56-year-old male patient who underwent wedge resection in a case of GIST located in the 2nd part of the duodenum is presented.

### Keywords

Duodenal GIST, Wedge Resection, Pancreas Sparing

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## Introduction

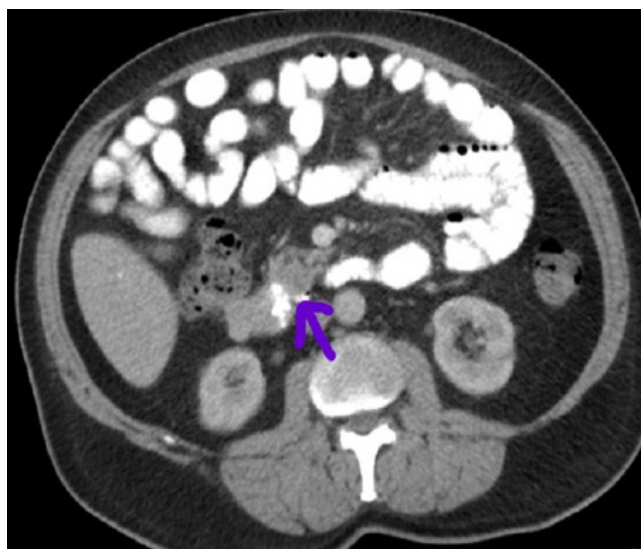
GISTs originating from intestinal Cajal cells are the most common mesenchymal tumors of the gastrointestinal tract [1]. 1-2% of all gastrointestinal tumors and 20-25% of soft tissue sarcomas originate from GIST [2]. Approximately 50-70% of GISTs are located in the stomach, 3-5% are seen in the duodenum [1, 3]. Curative treatment is still provided by surgical resection in cases of GISTs [4]. In cases of duodenal GIST, the anterior wall of the 2nd part of the duodenum was evaluated. In the patient who underwent wedge duodenal resection, no recurrence was detected in the 5-year follow-up. Surgical treatment alternatives are available such as pancreaticoduodenectomy (PD), pancreatic-sparing duodenectomy (PSD), segmental duodenectomy (SD) or wedge duodenectomy (WD) according to the localization of the tumor. The main goal of all these methods is to provide R0 resection. Unlike adenocancers, GISTs do not tend to lymphatic metastases [5], and local invasion into surrounding tissues is rare [4]. For the reasons listed, radical lymph dissection or wide resections do not contribute to disease-free survival in nonmetastatic cases [6]. In this case report, a case of nonmetastatic GIST located on the anterior wall of the 2nd part of the duodenum was evaluated. In the patient who underwent wedge duodenal resection, no recurrence was detected in the 5-year follow-up.

## Case Report

In 2016, a 56-year-old male patient applied to our clinic with complaints of dizziness, weakness, and melena. The patient who applied to the emergency unit with similar complaints in 2009 and 2013 and upper gastrointestinal endoscopy was unremarkable and capsule endoscopy was recommended. Abdominal CT imaging of the patient revealed asymmetric wall thickening localized in the 2nd part of the duodenum (Figure 1). No metastases were detected in cross-sectional imaging. In the upper gastrointestinal endoscopy examination, a submucosal broad-based mass with an ulcerated surface located postbulbar was detected in the duodenum. The patient was operated with a pre- diagnosis of GIST located on the anterior wall of the 2nd part of the duodenum. In laparotomy, a 3\*4 cm mass extending laterally was seen on the anterior wall of the duodenum in the 2nd section (Figure 2). The tumor, which was determined not to have pancreatic invasion, was removed by local wedge resection from the anterior surface by providing full kocherization of the duodenum. No tumor was detected at the resection margins in the peroperative frozen-section evaluation.

Duodenum was closed with interrupted Gambee suture technique in the histopathological evaluation of the tumor; 3,6\*3,3 cm size, mitotic index 3-4/50 FPHs, Ki67: 3% positive GIST was detected.

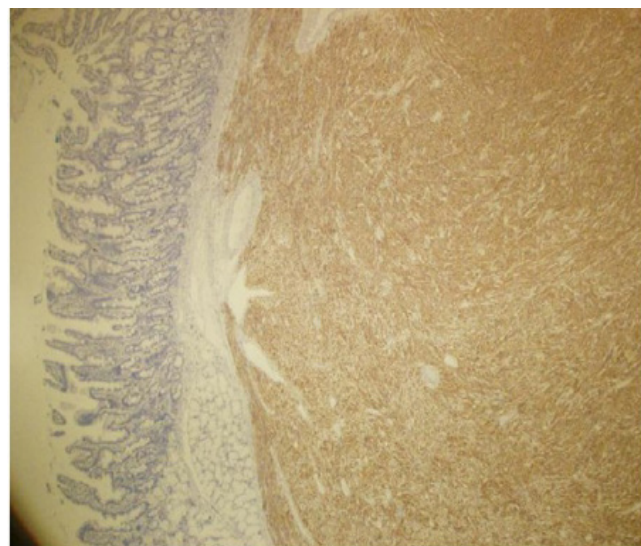
In immunohistochemical staining, vimentin and C117 were strongly positive and S100 was negative (Figure 3). No tumor was detected in the surgical margins on histopathological examination. Oral intake was well tolerated on the second postoperative day, and the patient was discharged on the 7th postoperative day uneventfully. There is disease-free survival in the 5-year follow-up of the patient.



**Figure 1.** Blue arrow shows duodenal wall thickening



**Figure 2.** Operative view of duodenal GIST



**Figure 3.** Immunohistochemical appearance

## Discussion

GISTs are mesenchymal tumors that can develop in almost any part of the gastrointestinal tract (GIS). They originate from Cajal cells, which are interstitial pacemaker cells [7]. Rarely diagnosed until the late 1990s, GISTs are the most common mesenchymal tumors of the gastrointestinal tract [7]. GISTs account for 1-2% of all GIS tumors. GISTs are localized mostly in the stomach and 50-70% are detected in the stomach, 30% in the small intestine, 5% in the colon and approximately 1% in the esophagus, respectively. Duodenal GISTs are seen at a rate of approximately 3-5% [7], and are most commonly located in the 2nd part of the duodenum [3]. GISTs have a malignant potential of 10-30%, and a chance of cure can still be achieved with surgical resection [6]. Like other sarcomas, GISTs are resistant to chemotherapy and radiotherapy, and currently available molecular targeted drugs such as imatinib and sunitinib provide disease control but are not curative. In cases of duodenal GIST, surgical treatment alternatives such as PD, pancreatic-sparing duodenectomy (PSD), segmental duodenectomy (SD), wedge local resections are available and can be applied with conservative or laparoscopic/robotic minimally invasive methods [6,7]. GISTs are mesenchymal tumors and, like other sarcomas, lymphatic metastases are rare, so they do not require lymphatic dissection [4, 5]. The absence of lymphatic invasion in patients who underwent PD confirms this situation [6]. In addition, GISTs are encapsulated and local invasion seems rarely [4,6]. The listed reasons make limited resections possible in cases of duodenal GIST adjacent to complicated anatomical structures. However, as in all GIS tumors, R0 resection should be performed. Care should be taken not to injure or rupture the tumor capsule in GIST cases, which are more fragile than adenocancers. Thus, the risk of local recurrence can be minimized. As in our case, duodenal GISTs are most commonly located in the second part [1]. While wedge resection is generally recommended for tumors <2 cm, in our case, the tumor diameter was 3,6 cm in histopathological examination. However, a wedge resection could be performed as it was located anterolaterally and was more than 2 cm away from the ampulla of Vater. In the report of Cavalli, who presented a similar case, a 4-year disease-free survival was reported [8]. PD may provide a more appropriate treatment in the 2nd section tumors that are adherent to the head of the pancreas that involve the medial wall [1]. In tumors located in the lateral wall, cure can be achieved with limited resections in cases where the ampulla Vater can be preserved [7]. Tumor size and mitotic index criteria are important in the follow-up of GISTs. According to the NCCN guideline, tumors <2 cm can be described as benign regardless of the mitotic index, while small bowel GISTs are considered to be more aggressive [2]. As tumor size and mitotic index increase, the progression of the disease increases. If recurrence or metastasis is 8.3% in duodenal GIST cases with a tumor size of 2-5 cm and a mitotic index <5/50 HPFs, as in our case, this rate is 85% in cases with tumor diameter >10 cm and mitotic index >5/50 HPFs rises above [2].

## Conclusion

We aimed to present a case of GIST, which was located on the anterolateral wall of the 2nd part of the duodenum, in which we

performed wedge resection, and no recurrence was detected in the 5-year follow-up. Duodenum has a complex anatomical structure, especially its 2nd part. Complicated anatomical neighborhood also complicates surgical treatments for duodenal tumors. However, especially in the treatment of GIST, PD with higher complications and mortality can be avoided since it does not require lymphadenectomy and allows limited resection with R0 resection.

## Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

## Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

## Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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